



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-1005; Project Identifier AD-2021-00842-T]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 747-400 series airplanes. This proposed AD was prompted by a report that after a certain circuit breaker tripped, power to the two pitot-static (P/S) probe heaters on the right-hand side was lost, and the flightcrew discovered conflicting procedures in the flightcrew operations manual/quick reference handbook (FCOM/QRH). This proposed AD would require revising the existing airplane flight manual (AFM) to incorporate procedures to be applied during P/S probe heater failure conditions. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1005; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Huey Ton, Aerospace Engineer, Systems and Equipment Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5320; email: huey.ton@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-1005; Project Identifier AD-2021-00842-T” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any

personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Huey Ton, Aerospace Engineer, Systems and Equipment Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5320; email: huey.ton@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA has received a report indicating that after a certain circuit breaker tripped, power to the two P/S probe heaters on the right-hand side was lost, and the flightcrew discovered conflicting procedures in the FCOM/QRH. Those existing procedures were written for single P/S probe heater failures and did not account for a scenario where both P/S probe heaters on one side of the airplane failed simultaneously, therefore failing to isolate the unheated P/S probes in this scenario. This condition, if not addressed, could result in the transmission of potentially inaccurate pitot static pressure data to the air data computer (ADC), resulting in erroneous or misleading air data being displayed, which, in combination with a stall, overspeed, overrun, or short/hard landing

conditions, could result in a reduced ability of the flightcrew to maintain safe flight and landing of the airplane.

The Boeing Company has revised and released an updated FCOM/QRH to address this condition by replacing the conflicting procedures with new procedures. However, the FCOM/QRH are not FAA-approved documents. Therefore, the FAA has determined the existing AFM must be revised to include procedures to address the identified unsafe condition.

The FAA has determined that the identified unsafe condition only applies to Model 747-400 series airplanes having a three ADC configuration, except for airplanes on which the Production Revision Record (PRR) 85655 has been incorporated.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Proposed AD Requirements in this NPRM

This proposed AD would require revising the existing AFM to incorporate procedures to be applied during P/S probe heater failure conditions.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 114 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

Estimated costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
AFM Revision	1 work-hour X \$85 per hour = \$85	None	\$85	\$9,690

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

The Boeing Company: Docket No. FAA-2021-1005; Project Identifier

AD-2021-00842-T.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by
[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL
REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 747-400 series airplanes, certificated in any category, having a three air data computer (ADC) configuration, except for airplanes on which the Production Revision Record (PRR) 85655 has been incorporated.

(d) Subject

Air Transport Association (ATA) of America Code 34, Navigation.

(e) Unsafe Condition

This AD was prompted by a report that after a certain circuit breaker tripped, power to the two pitot-static (P/S) probe heaters on the right-hand side was lost, and the flightcrew discovered conflicting procedures in the flightcrew operations manual/quick

reference handbook (FCOM/QRH). The FAA is issuing this AD to address the conflicting procedures, which could result in the transmission of potentially inaccurate pitot static pressure data to the ADC, resulting in erroneous or misleading air data being displayed, which, in combination with a stall, overspeed, overrun, or short/hard landing condition, could result in reduced ability of the flightcrew to maintain continued safe flight and landing of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Airplane Flight Manual (AFM) Revisions

Within 90 days after the effective date of this AD, revise the Non-Normal Procedures Section of the existing AFM to include the changes specified in paragraphs (g)(1) through (4) of this AD. Revising the existing AFM to include the changes specified in paragraphs (g)(1) through (4) of this AD, may be done by inserting a copy of figure 1 to paragraph (g)(1) through figure 4 to paragraph (g)(4) of this AD into the existing AFM.

(1) In Section 2, Non-Normal Procedures, add the “HEAT P/S CAPT” paragraph to include the information in figure 1 to paragraph (g)(1) of this AD.

Figure 1 to paragraph (g)(1) – AFM Revision: Heat P/S Captain

PITOT-STATIC PROBE HEAT

(Required by AD 2021--**)**

HEAT P/S CAPT

The HEAT P/S CAPT message indicates that captain’s pitot static probe heat is failed. This procedure objective is to determine whether more than one probe heat is failed, and to select air data sources to minimize or to prevent erroneous flight instrument indications.

Disengage the autopilot.

If EICAS message HEAT P/S CAPT is displayed and HEAT P/S L AUX is blank, place the captain’s air data source selector to R and the first officer’s air data source selector to C. Engage the R autopilot, if needed. L and C autopilots are unreliable in icing conditions, end of procedure.

[Disengage the autopilot.]

If EICAS messages HEAT P/S CAPT and HEAT P/S L AUX are both displayed, place the captain’s air data source selector to C. Engage any autopilot, if needed. Avoid icing conditions. Flight in icing conditions can result in unreliable standby flight instrument indications.

Note Inoperative Items:

- Both pitot probe heaters on the left side of the airplane inoperative – Avoid Icing Conditions.
- Autothrottle inoperative, Reference EPR is blank - Use manual throttle.
- LNAV and VNAV inoperative – Use HDG SEL or HDG HOLD and FLCH, V/S or ALT HOLD.

Do not accomplish the HEAT P/S L AUX non-normal procedure, end of procedure.

(2) In Section 2, Non-Normal Procedures, add the “HEAT P/S F/O” paragraph to include the information in figure 2 to paragraph (g)(2) of this AD.

Figure 2 to paragraph (g)(2) – AFM Revision: Heat P/S First Officer

PITOT-STATIC PROBE HEAT (CONTINUED) (Required by AD 2021--**)**

HEAT P/S F/O

The HEAT P/S F/O message indicates that First Officer’s pitot static probe heat is failed. This procedure objective is to determine whether more than one probe heat is failed, and to select air data sources to minimize or to prevent erroneous flight instrument indications.

Disengage the autopilot.

If EICAS message HEAT P/S F/O is displayed and HEAT P/S R AUX is blank, place the captain’s air data source selector to C and the first officer’s air data source selector to L. Engage the L or C autopilot, if needed. R autopilot is unreliable in icing conditions, end of procedure.

[Disengage the autopilot.]

If EICAS messages HEAT P/S F/O and HEAT P/S R AUX are both displayed, engage the L or C autopilot, if needed. R autopilot is unreliable in icing conditions. Avoid icing conditions. Flight in icing conditions can result in unreliable first officer’s flight instrument indications.

Note Inoperative Items:

- Both pitot probe heaters on the right side of the airplane inoperative – Avoid Icing Conditions.
- Autothrottle inoperative, Reference EPR is blank - Use manual throttle.
- LNAV and VNAV inoperative – Use HDG SEL or HDG HOLD and FLCH, V/S or ALT HOLD.

Do not accomplish the HEAT P/S R AUX non-normal procedure, end of procedure.

(3) In Section 2, Non-Normal Procedures, add the “HEAT P/S L AUX” paragraph to include the information in figure 3 to paragraph (g)(3) of this AD.

Figure 3 to paragraph (g)(3) – AFM Revision: Heat P/S Left Auxiliary

PITOT-STATIC PROBE HEAT (CONTINUED) (Required by AD 2021--**)**

HEAT P/S L AUX

The HEAT P/S L AUX message indicates that left auxiliary pitot static probe heat is failed. This procedure objective is to determine whether more than one probe heat is failed, and to select air data sources to minimize or to prevent erroneous flight instrument indications.

Disengage the autopilot.

If EICAS message HEAT P/S L AUX is displayed and HEAT P/S CAPT is blank, place the captain’s air data source selector to C and the first officer’s air data source selector to L. Engage the L or C autopilot, if needed. Avoid Icing Conditions. Flight in icing conditions can result in unreliable standby flight instrument indications, end of procedure.

[Disengage the autopilot.]

If EICAS messages HEAT P/S L AUX and HEAT P/S CAPT are both displayed, place the captain’s air data source selector to C. Engage any autopilot, if needed. Avoid icing conditions. Flight in icing conditions can result in unreliable standby flight instrument indications.

Note Inoperative Items:

- Both pitot probe heaters on the left side of the airplane are inoperative – Avoid Icing Conditions.
- Autothrottle inoperative, Reference EPR is blank - Use manual throttle.
- LNAV and VNAV inoperative – Use HDG SEL or HDG HOLD and FLCH, V/S or ALT HOLD.

Do not accomplish the HEAT P/S CAPT non-normal procedure, end of procedure.

(4) In Section 2, Non-Normal Procedures, add the “HEAT P/S R AUX” paragraph to include the information in figure 4 to paragraph (g)(4) of this AD.

Figure 4 to paragraph (g)(4) – AFM Revision: Heat P/S Right Auxiliary

PITOT-STATIC PROBE HEAT (CONTINUED) (Required by AD 2021--**)**

HEAT P/S R AUX

The HEAT P/S R AUX message indicates that right auxiliary pitot static probe heat is failed. This procedure objective is to determine whether more than one probe heat is failed, and to select air data sources to minimize or to prevent erroneous flight instrument indications.

Disengage the autopilot.

If EICAS message HEAT P/S R AUX is displayed and HEAT P/S F/O is blank, place the captain's air data source selector to R and the first officer's air data source selector to C. Engage the R autopilot, if needed, end of procedure.

[Disengage the autopilot.]

If EICAS messages HEAT P/S R AUX and HEAT P/S F/O are both displayed, engage the L or C autopilot, if needed. R autopilot is unreliable in icing conditions. Avoid icing conditions. Flight in icing conditions can result in unreliable first officer's flight instrument indications.

Note Inoperative Items:

- Both pitot probe heaters on the right side of the airplane are inoperative – Avoid Icing Conditions.
- Autothrottle inoperative, Reference EPR is blank - Use manual throttle.
- LNAV and VNAV inoperative – Use HDG SEL or HDG HOLD and FLCH, V/S or ALT HOLD.

Do not accomplish the HEAT P/S F/O non-normal procedure, end of procedure.

(h) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (i)(2) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(i) Related Information

(1) For more information about this AD, contact Huey Ton, Aerospace Engineer, Systems and Equipment Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5320; email: huey.ton@faa.gov.

(2) For information about AMOCs, contact Frank Carreras, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3539; email: frank.carreras@faa.gov.

Issued on November 12, 2021.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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